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01/08/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                     |  |
|------------------------------|--------------------------------------|-------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/809,719 | <b>Applicant(s)</b><br>TEETS ET AL. |  |
|                              | <b>Examiner</b><br>ANDREW NGUYEN     | <b>Art Unit</b><br>4124             |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 9/14/04.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 3/25/04 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/25/04</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "54" and "126", "77" and "146", "125" and "58", and several other pairs of reference characters have been used to designate a single component (Fig 19 – several examples). Further, "snap rings", "o-rings", and "lugs" have been given several different reference characters in several of the figures. If they need to be separately identified, applicant must clearly define a single term for each character and use that term consistently throughout the specification and claims.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "54" has been used to designate a spindle sleeve, housing, and support.

3. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: In claim 4, the limitation “shaft seals” is not defined in the specification. In claim 8, “common fastener” is not defined in the specification. In claim 12, “land area” is not defined in the specification. In claim 16, a “housing insulating air gap” is not defined in the specification.

***Claim Objections***

5. Claims 1 objected to because of the following informalities: The recited “said other of said stages” on line 8 and "said the recuperator" on line 9 lacks antecedent basis. Appropriate correction is required.

6. Claim 2 is objected to because of the following informalities: The term “consisting”, used on line 13, is closed-form language. The rotor spools would consist only of a rotor spool and bearings (nothing else). On line 14, “and axially insertable”, it is assumed that applicant is referring to the “said bearings”. To make this clear, examiner suggests the replacement of "and axially insertable" with "and are axially insertable". Appropriate correction is required.

7. Claim 3 is objected to because of the following informalities: On lines 17 and 18, “said microturbine engine with” and “axially insertable into the hybrid microturbine engine housing,” are unnecessary and complicate the intended meaning of the claim. Appropriate correction is required.

8. Claim 4 is objected to because of the following informalities: "said compressor air inlet" lacks antecedent basis. On line 13, a period is needed after "inlet" and a new sentence needs to start with "the said shaft seals... ". Appropriate correction is required.

9. Claim 5 is objected to because of the following informalities: "said bearing outside diameter" and "said bearing housing inside diameter" lacks antecedent basis. Appropriate correction is required.

10. Claim 6 is objected to because of the following informalities: On line 7, the word "and" should be deleted because "the bearing housing outside diameter" is "received". Appropriate correction is required.

11. Claim 7 is objected to because of the following informalities: On line 23, "said bearing force" lacks antecedent basis. Appropriate correction is required.

12. Claim 10 is objected to because of the following informalities: On line 10, "said alternator rotor" lacks antecedent basis. Appropriate correction is required.

13. Claim 11 is objected to because of the following informalities: On line 4, "the compressor housing" lacks antecedent basis. Appropriate correction is required.

14. Claim 14 is objected to because of the following informalities: On line 8, "said microturbine compressor" lacks antecedent basis. Appropriate correction is required.

15. Claim 15 is objected to because of the following informalities: On line 21, "said alternator rotor" lacks antecedent basis. Appropriate correction is required.

16. Claim 16 is objected to because of the following informalities: On line 18, "said structure air insulation gap" lacks antecedent basis. On line 19, "said compressor inlet spool area" lacks antecedent basis. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

17. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

18. Claims 1-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims recite the limitation "said compressors are staged" in the first sentence. It is unclear in the claims whether each compressor has more than one stage, or whether each compressor is a stage. On line 5, the "other of said spool" is defined as "comprising a turbine, compressor and alternator". The compressor of the "other of said spool" is already described in line 3 ("said rotor spools each have a compressor"). A single compressor may only be introduced/defined once (no double inclusion).

19. Claims 2 and 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant claims a rotor spool that is "axially insertable" into "said hybrid microturbine". Said hybrid microturbine is said to comprise the rotor spools, along with several other components. Thus, the claim reads as rotor spools that are axially insertable into themselves, or axially insertable into the other components. This is ambiguous and unclear. Rotor spools are said to consist of a rotor

spool and rotor spool bearings. However, in claim 1, rotor spools are said to have a compressor. The rotor spools are further defined as being a turbocharger and comprising a turbine, compressor, and alternator. Applicant must clearly define what he means by "rotor spool".

20. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The "shaft seal" is not defined in the specification. The structural relationship between the o-rings and shaft seals is unclear as claimed. The shaft seals are said to incorporate the o-rings, but at the same time the o-rings are outside of the shaft seal. These two relationships are different and contradictory.

21. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The bearing housing outside diameter having "common resilient o-ring details" is ambiguous. It is unclear whether the bearing housing has details similar to common resilient o-rings or whether the housing has actual o-rings. It is also unclear whether the bearing housing outside diameter or the o-ring is "both an anti-rotation device and seal".

22. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear in lines 11-13 whether the rotor bearing or the bearing housing has a snap ring and common radially displaced lugs.

23. Claims 8 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear to what the limitations of "are retained to the bearing housing" and "all retained ..." are referring to. "The turbocharger spool housing" on line 9 and "the said thrust bearing outer race" lacks antecedent basis. It is unclear when applicant says, "and is located between the said thrust bearing..." what applicant is referring to (what is located between the outer race and the snap ring?). The claims will not be further treated on the merits. The scope of the claims cannot be determined as they are currently presented.

24. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear between what two components the "relative rotation" is occurring. The term "wherein" on line 12 is redundant.

25. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The "exiting end area of the said housing" and the "exiting blades area" lack antecedent basis and are unspecific.

26. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. "Land area" is not properly defined in the specification. The structural relationship between the "housing stand-off" and the "land" is unclear as



claimed ("opposite side" – opposite of what?). The claim will not be further treated on the merits. The scope of the claim cannot be determined as it is currently presented.

27. Claim 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear which compressor (turbocharger or other) is in fluid communication with the combustor housing. It is also unclear whether the combustor housing is in fluid communication with the compressor *and* the turbine, or if the turbine is in fluid communication with the turbocharger spool turbine. The claim will not be further treated on the merits. The scope of the claim cannot be determined as it is currently presented.

28. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The terminology "with fluid communication between" is ambiguous in that it does not make the "air inlet duct" fluidly connected to the turbocharger compressor or the microturbine compressor. As stated, the claim simply implies that there is an air inlet duct within the microturbine and the microturbine has fluid communication between the turbocharger compressor and the microturbine compressor. The air inlet duct may or may not have anything to do with the communication. In addition, applicant frequently refers to the entire invention as a hybrid microturbine engine. In several of the claims, applicant refers to a single one of the turbines as the microturbine. This is contradictory and adds confusion.

Art Unit: 3742

29. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. "This product area" lacks antecedent basis. It is unclear what structure "this product area" is referring to.

30. Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. "The said microturbine spool compressor rotor" lacks antecedent basis. It is unclear which compressor (of the pair) the claim refers to. "The proximal shaft seal end" and "Said shaft seal" both lack antecedent basis. A shaft seal with a structure must be defined prior to "said shaft seal". The claim will not be further treated on the merits. The scope of the claim cannot be determined as it is currently presented.

***Claim Rejections - 35 USC § 102***

32. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

33. Claim 1 rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,081,832 to Mowill (Mowill).

Mowill teaches:

*A hybrid microturbine engine having a pair of rotor spools (Fig 1, HP and LP) and said rotor spools each have a compressor (LPC and HPC), said compressors are*

*staged, one of said pair of spools being a turbocharger, the other of the said spool comprising a turbine (HPT), compressor (HPC) and alternator (20) wherein said turbine including blades (Fig 5, 16) for being driven by gaseous fluid developed by said microturbine engine and said compressor having blades (14) for compressor air delivered to said microturbine engine, said other of said stages for driving said alternator for developing electricity (intended use statements are not given patentable weight) wherein said the recuperator of said microturbine engine is eliminated (col 8 lines 47-51)*

***Claim Rejections - 35 USC § 103***

34. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

35. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,081,832 to Mowill (Mowill) in view of common knowledge and evidenced by US Patent 4,486,147 to Byrne et al (Byrne).

In reference to claim 2:

Mowill in view of Byrne teaches:

*An electrical power generating device as claimed in claim 1 (see rejection of claim 1 above), wherein said hybrid microturbine engine said rotor spools are module assemblies consisting of a said rotor spool (col 1 line 47 "shaft means"), rotor spool bearings (68 in Byrne) and said bearings are retained within a bearing*

*housing (70 in Byrne) and axially insertable into said hybrid microturbine (Byrne, Fig 1 - compressor section of rotor must be axially inserted into housing 22).*

Mowill does not explicitly teach bearings and an axially insertable rotor assembly. It would be obvious to one of ordinary skill in the art at the time of the invention that these features are inherent in Mowill's apparatus. Official notice is taken that bearings are necessary for structural communication between rotating and static components and an axially insertable rotor is often used for simplicity of assembly. Official notice is taken. These features are also taught by Byrne. Evidence of such common knowledge is found in Byrne.

36. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,081,832 to Mowill (Mowill) as applied to claim 2 above in view of US Patent 5,085,521 to Singh (Singh).

In reference to claim 3:

Mowill teaches:

*An electrical power generating device as claimed in claim 2 (see rejection of claim 2 above), wherein said hybrid microturbine engine with said rotor spool module assemblies, axially insertable into the hybrid microturbine engine housing (see rejection of claim 2 above),*

Mowill does not teach:

*have a an oil squeeze film damper cavity between the inner diameter of the said engine housing and outer diameter of the said bearing housings.*

Singh teaches:

An oil squeeze film damper cavity (20, Fig 2) between the inner diameter of the engine housing (16) and outer diameter of the bearing housings (13). It would have been obvious to one of ordinary skill in the art at the time of the invention to include an oil squeeze film damping cavity in order to introduce oil to the cavity for damping action on the bearing assembly (col 2 lines 37-38), as explicitly taught by Singh.

37. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,081,832 to Mowill (Mowill) in view of US Patent 3,942,908 to Pilarczyk (Pilarczyk).

Mowill teaches:

*A hybrid microturbine engine having a pair of rotor spools (Fig 1, HP and LP) and said rotor spools each have a compressor (LPC and HPC), said compressors are staged, one of said pair of spools being a turbocharger, the other of the said spool comprising a turbine (HPT), compressor (HPC) and alternator (20) wherein said turbine including blades (Fig 5, 16) for being driven by gaseous fluid developed by said microturbine engine and said compressor having blades (14) for compressor air delivered to said microturbine engine, said other of said stages for driving said alternator for developing electricity (intended use statements are not given patentable weight) wherein said the recuperator of said microturbine engine is eliminated (col 8 lines 47-51).*

Mowill does not teach:

*Said rotor spools have rotor bearings mounted within a bearing housing within the said engine with shaft seals mounted in said bearing housing and between*

*the said rotor spool bearing and said compressor air inlet and the said shaft seals incorporate o-rings between said shaft seal outside diameter and bearing housing to both seal and circumferentially retain the said shaft seal*

Pilarczyk teaches:

Rotor bearings (72) mounted within a bearing housing (74) with shaft seals mounted in the bearing housing and between the said rotor spool bearing and said compressor air inlet and the said shaft seals incorporate o-rings (192, col 7 lines 12-15) between said shaft seal outside diameter and bearing housing to both seal and circumferentially retain the said shaft seal. It would have been obvious to one of ordinary skill in the art at the time of the invention to one of ordinary skill in the art at the time of the invention to use the bearings and o-rings of Pilarczyk in the turbine of Mowill in order to create a tight sealing fit around the bearings, as explicitly taught by Pilarczyk.

38. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,081,832 to Mowill (Mowill) in view of US Patent 3,652,139 to Memery (Memery).

In reference to claim 5:

Mowill teaches:

*A hybrid microturbine engine having a pair of rotor spools (Fig 1, HP and LP) and said rotor spools each have a compressor (LPC and HPC), said compressors are staged, one of said pair of spools being a turbocharger, the other of the said spool comprising a turbine (HPT), compressor (HPC) and alternator (20) wherein said turbine including blades (Fig 5, 16) for being driven by gaseous fluid*

Art Unit: 3742

*developed by said microturbine engine and said compressor having blades (14) for compressor air delivered to said microturbine engine, said other of said stages for driving said alternator for developing electricity (intended use statements are not given patentable weight) wherein said the recuperator of said microturbine engine is eliminated (col 8 lines 47-51).*

Mowill does not teach:

*Said rotor spools have rotor bearings mounted within said bearing housing and within the said engine have a controlled radial gap between the said bearing outside diameter and said bearing housing inside diameter for oil squeeze film damping*

Memery teaches:

A controlled radial gap between the bearing and the support structure (col 1 lines 65-74). It would have been obvious to one of ordinary skill in the art at the time of the invention to maintain a controlled radial gap for oil squeeze film damping in order to control the oil spring rate and alter the critical speed of the rotating member, as explicitly taught by Memery.

In reference to claim 6:

Mowill in view of Memery teaches:

*An electrical power generating device as claimed in claim 5 (see rejection of claim 5 above),*

Mowill does not teach:

*wherein said bearing housing outside diameter and is received into said engine inside diameter area and have common resilient o-ring details and are both an anti rotation device and seal for said oil squeeze film damper area.*

Memery teaches:

O-rings used as a sealing mechanism within a gas turbine (72). O-rings are well known in the art as a part to seal between two objects. Official notice is taken. It would have been obvious to one of ordinary skill in the art to use O-rings between the bearing housing outside diameter and the engine inside diameter in order to seal the gap, as explicitly taught by Memery (col 4 lines 40-50).

40. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,081,832 to Mowill (Mowill) in view of US Patent 3,652,139 to Memery (Memery) as applied to claim 5 above, and further in view of US Patent 6,314,717 to Teets et al (Teets '717).

Mowill in view of Memery teaches:

*An electrical power generating device as claimed in claim 5 (see rejection of claim 5 above)*

Mowill in view of Memery does not teach:

*wherein the said rotor bearing within said bearing housing with said squeeze film damper is axially and circumferentially restrained by the said bearing housing having a snap ring with ends open and with common radially displaced lugs where one lug is integral to the said bearing and the other integral to the said static bearing housing. The engine operation with rotor spool rotation causes a*



*circumferential bearing lug force to the snap ring end and said end co-acting with the static said bearing housing lug resists the said bearing force from circumferential movement.*

Teets teaches:

A bearing/lug arrangement that has a snap ring (216) and lugs (212). One lug is integral with the bearing (20) and the other is integral to the bearing housing (200). The apparatus resists circumferential movement of the bearing housing (col 12 lines 27-33). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the bearing/lug arrangement as taught by Teets '717 in the apparatus of Mowill in order to limit circumferential movement, as explicitly taught by Teets '717.

41. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,081,832 to Mowill (Mowill)

Mowill teaches:

*A hybrid microturbine engine having a pair of rotor spools (Fig 1, HP and LP) and said rotor spools each have a compressor (LPC and HPC), said compressors are staged, one of said pair of spools being a turbocharger, the other of the said spool comprising a turbine (HPT), compressor (HPC) and alternator (20) wherein said turbine including blades (Fig 5, 16) for being driven by gaseous fluid developed by said microturbine engine and said compressor having blades (14) for compressor air delivered to said microturbine engine, said other of said stages for driving said alternator for developing electricity (intended use*

Art Unit: 3742

statements are not given patentable weight) *wherein said the recuperator of said microturbine engine is eliminated* (col 8 lines 47-51).

Mowill fails to teach:

*Within the said microturbine having an electrical stator with iron material laminated and electrical wire, and relative rotation between the said spool with said alternator rotor and having permanent magnets therein, electrical power output from said stator electrical wire are thru said wire wherein and attached to output electrical power lugs and said lugs are attached to a common output lug insulation block which is attached to the microturbine housing*

Official notice is taken that the elements as claimed (iron laminated stator coils, permanent magnets, electrical power output blocks) are common to electric generator and power generation systems and are well known in the art. It would be obvious to one of ordinary skill in the art to include these elements in any power generation system with a turbine/generator, as these elements are necessary for the system to function properly.

42. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,081,832 to Mowill (Mowill) in view of US Patent 5,343,690 to Shekleton (Shekleton).

Mowill teaches:

*A hybrid microturbine engine having a pair of rotor spools (Fig 1, HP and LP) and said rotor spools each have a compressor (LPC and HPC), said compressors are staged, one of said pair of spools being a turbocharger, the other of the said*

*spool comprising a turbine (HPT), compressor (HPC) and alternator (20) wherein said turbine including blades (Fig 5, 16) for being driven by gaseous fluid developed by said microturbine engine and said compressor having blades (14) for compressor air delivered to said microturbine engine, said other of said stages for driving said alternator for developing electricity (intended use statements are not given patentable weight) wherein said the recuperator of said microturbine engine is eliminated (col 8 lines 47-51).*

Mowill does not teach:

*The said spool having a said compressor, said turbine and said alternator are housed within the said microturbine housing and this microturbine housing incorporates predominant tangent air nozzles located in the compressor housing exiting end area of the said housing wherein the compressor exiting blades area communicate with directed said nozzles as a means to cause rotation of the said spool of the said microturbine for starting operation*

Shekleton teaches:

Start-up nozzles (130, 134), located at the “exiting end area of the housing” (Fig 2) that direct gases at the compressor blades to accelerate the blades (col 2 lines 2-8). It would have been obvious to one of ordinary skill in the art at the time of the invention to include air nozzles directed at the compressor blades in Mowill’s engine in order to accelerate the compressor blades and start the engine, as explicitly taught by Shekleton.

Art Unit: 3742

43. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,081,832 to Mowill (Mowill).

Mowill teaches:

*A hybrid microturbine engine having a pair of rotor spools (Fig 1, HP and LP) and said rotor spools each have a compressor (LPC and HPC), said compressors are staged, one of said pair of spools being a turbocharger, the other of the said spool comprising a turbine (HPT), compressor (HPC) and alternator (20) wherein said turbine including blades (Fig 5, 16) for being driven by gaseous fluid developed by said microturbine engine and said compressor having blades (14) for compressor air delivered to said microturbine engine, said other of said stages for driving said alternator for developing electricity (intended use statements are not given patentable weight) wherein said the recuperator of said microturbine engine is eliminated (col 8 lines 47-51).*

Mowill does not teach:

*An air inlet duct within the said microturbine with fluid communication between the said turbocharger compressor and said microturbine compressor such to induce a fluid preswirl in direction of rotation to the microturbine compressor inlet flow.*

Stator vanes at the inlet of compressors are well known in the art as means to direct flow into the compressor at a desired angle. An example of such vanes are the stators located at the inlet duct of jet engines. Official notice is taken that stator vanes at a compressor inlet is well known. It would have been obvious to one of ordinary skill

Art Unit: 3742

in the art at the time of the invention to include a duct with the means to induce preswirl in order to help direct flow into the compressor and increase efficiency.

44. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,081,832 to Mowill (Mowill) in view of US Patent 5,523,635 to Ferreira et al (Ferreira).

Mowill teaches:

*A hybrid microturbine engine having a pair of rotor spools (Fig 1, HP and LP) and said rotor spools each have a compressor (LPC and HPC), said compressors are staged, one of said pair of spools being a turbocharger, the other of the said spool comprising a turbine (HPT), compressor (HPC) and alternator (20) wherein said turbine including blades (Fig 5, 16) for being driven by gaseous fluid developed by said microturbine engine and said compressor having blades (14) for compressor air delivered to said microturbine engine, said other of said stages for driving said alternator for developing electricity (intended use statements are not given patentable weight) wherein said the recuperator of said microturbine engine is eliminated (col 8 lines 47-51).*

Mowill does not teach:

*An electrical stator module is located within the microturbine housing, and the said electrical stator has a laminated iron base core stator with electrical wire and located about and co-axial to the said alternator rotor of said microturbine with a cooling sleeve integrated to the said stator outer diameter which is received inside the microturbine housing and this product area between the outside of the*

*said cooling sleeve and inside of the said microturbine housing a cooling fluid is passed to remove the heat from the said stator*

Ferreira teaches:

A stator cooling sleeve with cooling channels that is fit onto the outer periphery of the stator (col 3 lines 24-27). It would have been obvious to one of ordinary skill in the art at the time of the invention to add a stator cooling sleeve which is fit onto the outer periphery of the stator in order to cool the stator, as explicitly taught by Ferreira.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW NGUYEN whose telephone number is (571)270-5063. The examiner can normally be reached on Monday through Friday 8:30 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Bomberg can be reached on 571-272-4922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3742

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AN

/Thor S. Campbell/

Primary Examiner, Art Unit 3742